

Unit 5

Factoring

Day 1

Factoring Using Integers - Part 1

Factoring Using the GCF - COMMON MONOMIAL FACTOR

1) $-8a^5 + 24a^3 - 44a^2$

$$-4a^2(2a^3 - 6a + 11)$$

Factoring Using the GCF - COMMON BINOMIAL FACTOR

2a)

$$5(x+3)^2 - 7(x+3)$$

$$(x+3)[5(x+3) - 7]$$

$$(x+3)(5x+15-7)$$

$$(x+3)(5x+8)$$

2b)

$$5(x+3)^2 - 15(x+3)$$

$$\text{let } y = x+3$$

$$5y^2 - 15y$$

$$5y(y-3)$$

$$5(x+3)[(x+3)-3]$$

$$5(x+3)(x)$$

$$5x(x+3)$$

FACTORING THE DIFFERENCE OF SQUARES

1) $4a^2 - 25$

$$(2a + 5)(2a - 5)$$

2) $16x^{2r} - y^{6s}$

$$(4x^r + y^{3s})(4x^r - y^{3s})$$

$$\begin{array}{c} x^{16} - y^{64} \\ \hline (x^{\frac{8}{4}} - y^{\frac{32}{8}})(x^{\frac{8}{4}} + y^{\frac{32}{8}}) \end{array}$$

3) $(x+y)^2 - 25$

$$[(x+y) - 5][(x+y) + 5]$$
$$(x+y-5)(x+y+5)$$

4) $16x^8 - 1$

$$(4x^4 + 1)(4x^4 - 1)$$
$$(4x^4 + 1)(2x^2 + 1)(2x^2 - 1)$$

FACTORIZING PERFECT SQUARE TRINOMIALS

1) $9m^2 + 30m + 25$
 $(3m + 5)^2$

2) $x^6 - 14x^3 + 49$
 $(x^3 - 7)^2$

$y = x^3$
 $y^2 - 14y + 49$

$$(3m \cdot 5)2 = 15m \cdot 2 = 30m$$

FACTOR BY GROUPING

1)

$$a^2 - ab - 5a + 5b$$

2)

$$m^2 - 4n - 4m - n^2$$

REVERSE FOIL/PRODUCT METHOD

ONE PROBLEM - FOUR WAYS!

1st way - factor by grouping AND CHECK

$$\begin{array}{r} 6 \cdot -15 \\ -90 \\ \hline 10 \cdot 9 \end{array}$$
$$6x^2 + x - 15$$
$$(6x^2 - 9x) + (10x - 15)$$
$$3x(2x - 3) + 5(2x - 3)$$
$$(2x - 3)(3x + 5)$$

2nd way - box method AND CHECK

$$6x^2 + x - 15$$

$$\begin{array}{r} 6 \cdot -15 \\ \hline -90 \end{array}$$

$10 - 9$

	$3x$	5
$2x$	$6x^2$	$10x$
-3	$-9x$	-15

$$(2x-3)(3x+5)$$

3rd way - "BEST" method AND CHECK

$$6x^2 + x - 15$$

$$\begin{array}{r} 6 \cdot -15 \\ -90 \\ \hline 10 \cdot -9 \end{array}$$

$$\frac{(6x + 10)}{2} \frac{(6x - 9)}{3}$$
$$(3x + 5)(2x - 3)$$

4th way - Educated guessing AND CHECK

$$6x^2 + x - 15$$

$$\begin{array}{r} 6 \cdot 15 \\ \hline -90 \end{array}$$

$$10 - 9$$

$$\begin{array}{c} \text{10X} \\ \text{---} \\ \text{-9X} \\ \text{---} \\ (2x - 3)(3x + 5) \end{array}$$

HOMEWORK:

Wksht #1 ,

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